



Index to Volume 36 (2004)

No 1 (January) pp 1–92	No 6 (May) pp 499–564	No 11 (September) pp 1011–1116
No 2 (February) pp 93–202	No 7 (June) pp 565–663	No 12 (October) pp 1117–1279
No 3 (March) pp 203–296	No 8 (July) pp 665–757	No 13 (November) pp 1281–1427
No 4 (April) pp 297–399	No 9 (August) pp 759–886	No 14 (December) pp 1429–1512
No 5 (April) pp 401–497	No 10 (September) pp 887–1009	

Article Index

No 1

A mesh reconstruction algorithm driven by an intrinsic property of a point cloud
H.-W. Lin, C.-L. Tai and G.-J. Wang 1

Volumetric feature recognition for machining components with freeform surfaces

V. Sundararajan and P. K. Wright 11

A study on a generalized parametric interpolator with real-time jerk-limited acceleration

S.-H. Nam and M.-Y. Yang 27

Geometric mouldability analysis by geometric reasoning and fuzzy decision making

Z.-P. Yin, H. Ding, H.-X. Li and Y.-L. Xiong 37

CAD modeling for the components made of multi heterogeneous materials and smart materials

K.-Z. Chen and X.-A. Feng 51

Aesthetic and functional analysis for product model validation in reverse engineering applications

P. Corbo, M. Germani and F. Mandorli 65

Smoothing haptic interaction using molecular force calculations

Y.-G. Lee and K. W. Lyons 75

Exploring the Future of Design

J. Heisserman 91

A Unified and Elegant Derivation of Bézier, B-spline, and other CAGD Concepts

W. Tiller 92

No 2

Editorial

K. Lee and N. M. Patrikalakis 93

Linear one-sided stability of MAT for weakly injective 3D domain

S. W. Choi and H.-P. Seidel 95

Solving spatial basic geometric constraint configurations with locus intersection

X.-S. Gao, C. M. Hoffmann and W.-Q. Yang 111

Revisiting decomposition analysis of geometric constraint graphs

R. Joan-Arinyo, A. Soto-Riera, S. Vila-Marta and J. Vilaplana-Pastó 123

A multi-resolution topological representation for non-manifold meshes

L. De Floriani, P. Magillo, E. Puppo and D. Sobrero 141

A coordinate system associated with points scattered on a surface

J.-D. Boissonnat and J. Flötto 161

ESOLID—a system for exact boundary evaluation

J. Keyser, T. Culver, M. Foskey, S. Krishnan and D. Manocha 175

Approximate medial axis as a Voronoi subcomplex

T. K. Dey and W. Zhao 195

No 3

Automatic hexahedral mesh generation for multi-domain composite models using a hybrid projective grid-based method

Y. Su, K. H. Lee and A. S. Kumar 203

A cellular topology-based approach to generating progressive solid models from feature-centric models

J. Y. Lee, J.-H. Lee, H. Kim and H.-S. Kim 217

Modelling cloud data using an adaptive slicing approach

Y. F. Wu, Y. S. Wong, H. T. Loh and Y. F. Zhang 231

Geometric algorithms for automated design of multi-piece permanent molds

A. K. Priyadarshi and S. K. Gupta 241

Choosing consistent constraints for beautification of reverse engineered geometric models

F. C. Langbein, A. D. Marshall and R. R. Martin 261

Sculptured surface machining using triangular mesh slicing

S. C. Park 279

Triple tangent flank milling of ruled surfaces

C. Menzel, S. Bedi and S. Mann 289

No 4

Editorial to: Industrial Geometry

H. Pottmann 297

Modeling buckled developable surfaces by triangulation

W. H. Frey 299

Boolean operations for 3D simulation of CNC machining of drilling tools

D. Tost, A. Puig and L. Pérez-Vidal 315

Generating tool paths on surfaces for a numerically controlled lathe cutting system

E. Wings and B. Jüttler 325

- Reconstruction of piecewise planar objects from point clouds
M. Peternell and T. Steiner 333
- Modifying CAD/CAM surfaces according to displacements prescribed at a finite set of points
R. F. Sarraga 343
- Exact and approximate computation of B-spline curves on surfaces
G. Renner and V. Weiß 351
- 3D surface filtering using spherical harmonics
K. Zhou, H. Bao and J. Shi 363
- Making constraint solvers more usable: overconstraint problem
C. M. Hoffmann, M. Sitharam and B. Yuan 377

No 5

- A virtual prototyping system for rapid product development
S. H. Choi and A. M. M. Chan 401
- A practical construction of G^1 smooth biquintic B-spline surfaces over arbitrary topology
X. Shi, T. Wang and P. Yu 413
- Interactive examination of surface quality on car bodies
G. Sußner, G. Greiner and S. Augustiniack 425
- Constrained shape modification of cubic B-spline curves by means of knots
I. Juhász and M. Hoffmann 437
- Parametric representation of a surface pencil with a common spatial geodesic
G.-J. Wang, K. Tang and C.-L. Tai 447
- Curve fitting and fairing using conic splines
X. Yang 461
- Constructive solid analysis: a hierarchical, geometry-based meshless analysis procedure for integrated design and analysis
D. Natekar, X. Zhang and G. Subbarayan 473
- Computer modeling approach for microsphere-packed bone scaffold
P. Lal and W. Sun 487

No 6

- Editorial to: Geometric Modeling and Processing 2002
H. Suzuki and R. Martin 499
- Applying knowledge to reverse engineering problems
R. B. Fisher 501
- Segmentation methods for smooth point regions of conventional engineering objects
P. Benkő and T. Várady 511
- A direct approach for subdivision surface fitting from a dense triangle mesh

- W. Ma, X. Ma, S.-K. Tso and Z. Pan 525
- Mapping 2D midship drawings into a 3D ship hull model based on STEP AP218
H.-J. Hwang, S. Han and Y.-D. Kim 537
- Information models of layout constraints for product life-cycle management: a solid-modelling approach
G. Theodosiou and N. S. Sapidis 549

No 7

- Adding draft angles on mechanical components containing constant radius blending surfaces
Y. Yan and S. T. Tan 565
- Automatic mesh generation and modification techniques for mixed quadrilateral and hexahedral element meshes of non-manifold models
Y. Su, K. H. Lee and A. S. Kumar 581
- Automated tool sequence selection for 3-axis machining of free-form pockets
R. M. D'Souza, C. Sequin and P. K. Wright 595
- Parameterization of clouds of unorganized points using dynamic base surfaces
P. N. Azariadis 607
- Multiresolution offsetting and loose convex hull clipping for 2.5D NC machining
J. Pang and R. Narayanaswami 625
- Control point adjustment for B-spline curve approximation
H. Yang, W. Wang and J. Sun 639
- Graphics-assisted Rolling Ball Method for 5-axis surface machining
P. J. Gray, F. Ismail and S. Bedi 653

No 8

- Reduce the stretch in surface flattening by finding cutting paths to the surface boundary
C. C. L. Wang, Y. Wang, K. Tang and M. M. F. Yuen 665
- Developing distributed applications for integrated product and process design
F. Mervyn, A. S. Kumar, S. H. Bok and A. Y. C. Nee 679
- A gap-based approach to capture fitting conditions for mechanical assembly
Z. Zou and E. P. Morse 691
- 3D clipping algorithm for feature mapping across domains
S. Subramani, S. R. P. R. Nalluri and B. Gurumoorthy 701

- A single solution method for converting 2D assembly drawings to 3D part drawings
M. Tanaka, L. Anthony, T. Kaneeda and J. Hirooka 723
- A surface based approach to recognition of geometric features for quality freeform surface machining
X. Zhang, J. Wang, K. Yamazaki and M. Mori 735
- Customizability analysis in design for mass customization
J. Jiao and M. M. Tseng 745

No 9

- Distributed CAD for supporting Internet collaborative design
J. Y. H. Fuh and A. Y. C. Nee 759
- A framework for a distributed CAD system
L. Denis, Y. Gardan and E. Perrin 761
- Feature-based design in a distributed and collaborative environment
W. D. Li, S. K. Ong, J. Y. H. Fuh, Y. S. Wong, Y. Q. Lu and A. Y. C. Nee 775
- Efficient surface reconstruction method for distributed CAD
S. Azernikov and A. Fischer 799
- Geometric model simplification for distributed CAD
Z. M. Qiu, Y. S. Wong, J. Y. H. Fuh, Y. P. Chen, Z. D. Zhou, W. D. Li and Y. Q. Lu 809
- The incremental editing of faceted models in an integrated design environment
D. Wu and R. Sarma 821
- Internet-enabled real-time collaborative assembly modeling via an e-Assembly system: status and promise
L. Chen, Z. Song and L. Feng 835
- Design formalism for collaborative assembly design
K.-Y. Kim, Y. Wang, O. S. Muogboh and B. O. Nnaji 849
- Role-based viewing envelopes for information protection in collaborative modeling
C. D. Cera, T. Kim, J. Han and W. C. Regli 873

No 10

- A geometric approach to the offsetting of profiles on three-dimensional surfaces
H.-Y. Tam H.-W. Law and H. Xu 887
- A hierarchically structured and constraint-based data model for intuitive and precise solid modeling in a virtual reality environment

- W. Ma, Y. Zhong, S.-K. Tso and T. Zhou 903
- Multiple-view feature modelling for integral product development
W. F. Bronsvort and A. Noort 929
- A concurrent engineering-oriented design database representation model
D. Xue and H. Yang 947
- Accurate tool position for five-axis ruled surface machining by swept envelope approach
J. C. J. Chiou 967
- Solving CSG equations for checking equivalency between two different geometric models
Z. Huang, S. Tian and J. Zhou 975
- An approach for feature semantics recognition in geometric models
P. Di Stefano, F. Bianconi and L. Di Angelo 993
- No 11**
- Editorial to special issue on solid modeling theory and applications
G. Elber and V. Shapiro 1011
- Fast swept volume approximation of complex polyhedral models
Y. J. Kim, G. Varadhan, M. C. Lin and D. Manocha 1013
- Any open bounded subset of \mathbb{R}^n has the same homotopy type as its medial axis
A. Lieutier 1029
- Shape retrieval using 3D Zernike descriptors
M. Novotni and R. Klein 1047
- Three-dimensional halfspace constructive solid geometry tree construction from implicit boundary representations
S. F. Buchele and R. H. Crawford 1063
- Approximation by skin surfaces
N. Kruithof and G. Vegter 1075
- Isotopic approximations and interval solids
T. Sakalis, T. J. Peters and J. Bisceglia 1089
- A shape design system using volumetric implicit PDES
H. Du and H. Qin 1101
- No 12**
- Optimization of rotations of a five-axis milling machine near stationary points
M. Munlin, S. S. Makhanov and E. L. J. Bohez 1117
- Virtual DesignWorks—designing 3D CAD models via haptic interaction
X. Liu, G. Dodds, J. McCartney and B. K. Hinds 1129
- Methods for feature-based design of heterogeneous solids
H. Liu, T. Maekawa, N. M. Patrikalakis, E. M. Sachs and W. Cho 1141
- Modifying free-formed NURBS curves and surfaces for offsetting without local self-intersection
Y. F. Sun, A. Y. C. Nee and K. S. Lee 1161
- Geometric algorithms for automated design of rotary-platen multi-shot molds
X. Li and S. K. Gupta 1171
- Putting objects into a cylindrical/rectangular bounded volume
C. K. Chan and S. T. Tan 1189
- Automatic G^1 arc spline interpolation for closed point set
X.-D. Chen, J.-H. Yong, G.-Q. Zheng and J.-G. Sun 1205
- A new format for 5-axis tool path computation, using B-spline curves
J. M. Langeron, E. Duc, C. Lartigue and P. Bourdet 1219
- Rough and finish tool-path generation for NC machining of freeform surfaces based on a multiresolution method
Z. Yin 1231
- Error-bounded biarc approximation of planar curves
H. Park 1241
- Geometry of inhibition and activation in kinematic waves
C. K. Au and T. C. Woo 1253
- Feature-based design for heterogeneous objects
X. Qian and D. Dutta 1263
- Special issue on automated synthesis of human-competitive designs by means of genetic programming 1279
- No 13**
- Oriented bounding box and octree based global interference detection in 5-axis machining of free-form surfaces
S. Ding, M. A. Mannan and A. N. Poo 1281
- Five-axis pencil-cut planning and virtual prototyping with 5-DOF haptic interface
W. Zhu and Y.-S. Lee 1295
- NURBS-based adaptive slicing for efficient rapid prototyping
W. Ma, W.-C. But and P. He 1309
- Segmentation of 3D triangulated data points using edges constructed with a C1 discontinuous surface fitting
A. Meyer and P. Marin 1327
- Local topological beautification of reverse engineered models
C. H. Gao, F. C. Langbein, A. D. Marshall and R. R. Martin 1337
- Automatic solid decomposition and reduction for non-manifold geometric model generation
C. S. Chong, A. S. Kumar and K. H. Lee 1357
- Halftoning colour volume datasets based on subdivision
D.-x. Wang, D.-m. Guo, Z.-y. Jia and L.-h. Jiang 1371
- High accuracy spline interpolation for 5-axis machining
M. Müller, G. Erdős and P. Xirouchakis 1379
- Free-form surface inspection techniques state of the art review
Y. Li and P. Gu 1395
- More Productive with Internet?
J. Y. H. Fuh 1419
- A PLASM Primer: Geometric Programming for Computer-Aided Design
J. Corney 1421
- CAD'04 Report
L. A. Piegl 1423
- No 14**
- Editorial to special issue: CAD education
N. S. Sapidis and M.-S. Kim 1429
- Education and training for CAD in the auto industry
D. A. Field 1431
- Engineers' CAX education—it's not only CAD
C. W. Dankwort, R. Weidlich, B. Guenther and J. E. Blaurock 1439
- Today's students, tomorrow's engineers: an industrial perspective on CAD education
X. Ye, W. Peng, Z. Chen and Y.-Y. Cai 1451
- Education-driven research in CAD
J. Rossignac 1461
- Turtle geometry in computer graphics and computer-aided design
R. Goldman, S. Schaefer and T. Ju 1471
- Teaching meshes, subdivision and multiresolution techniques
S. Bischoff and L. Kobbelt 1483
- Teaching computer game design and construction
S. Schaefer and J. Warren 1501

Author index

- Anthony, L. 723
 Au, C. K. 1253
 Augustiniack, S. 425
 Azariadis, P. N. 607
 Azernikov, S. 799

 Bao H. 363
 Bedi, S. 289, 653
 Benkő, P. 511
 Bianconi, F. 993
 Bisceglia, J. 1089
 Bischoff, S. 1483
 Blaurock, J. E. 1439
 Bohez, E. L. J. 1117
 Boissonnat, J.-D. 161
 Bok, S. H. 679
 Bourdet, P. 1219
 Bronsvoort, W. F. 929
 Buchele, S. F. 1063
 But, W.-C. 1309

 Cai, Y.-Y. 1451
 Cera, C. D. 873
 Chan, A. M. M. 401
 Chan, C. K. 1189
 Chen, K.-Z. 51
 Chen, L. 835
 Chen, X.-D. 1205
 Chen, Y. P. 809
 Chen, Z. 1451
 Chiou, J. C. J. 967
 Cho, W. 1141
 Choi, S. H. 401
 Choi, S. W. 95
 Chong, C. S. 1357
 Corbo, P. 65
 Corney, J. 1421
 Crawford, R. H. 1063
 Culver, T. 175

 Dankwort, C. W. 1439
 De Florian, L. 141
 Denis, L. 761
 Dey, T. K. 195
 Di Angelo, L. 993
 Ding, H. 37
 Ding, S. 1281
 Di Stefano, P. 993
 Dodds, G. 1129
 D'Souza, R. M. 595
 Du, H. 1101
 Duc, E. 1219
 Dutta, D. 1263

 Elber, G. 1011
 Erdős, G. 1379

 Feng, L. 835
 Feng, X.-A. 51
 Field, D. A. 1431
 Fischer, A. 799
 Fisher, R. B. 501
 Flötotto, J. 161
 Foskey, M. 175
 Frey, W. H. 299
 Fuh, J. Y. H. 759, 775, 809, 1419

 Gao, C. H. 1337
 Gao, X.-S. 111
 Gardan, Y. 761
 Germani, M. 65
 Goldman, R. 1471
 Gray, P. J. 653
 Greiner, G. 425
 Gu, P. 1395
 Guenther, B. 1439
 Guo, D.-m. 1371
 Gupta, S. K. 241, 1171
 Gurumoorthy, B. 701

 Han, J. 873
 Han, S. 537
 He, P. 1309
 Heisserman, J. 91
 Hinds, B. K. 1129
 Hirooka, J. 723
 Hoffmann, C. M. 111, 377
 Hoffmann, M. 437
 Huang, Z. 975
 Hwang, H.-J. 537

 Ismail, F. 653

 Jia, Z.-y. 1371
 Jiang, L.-h. 1371
 Jiao, J. 745
 Joan-Arinyo, R. 123
 Ju, T. 1471
 Juhász, I. 437
 Jüttler, B. 325

 Kaneeda, T. 723
 Keyser, J. 175
 Kim, H. 217
 Kim, H.-S. 217
 Kim, K.-Y. 849
 Kim, M.-S. 1429
 Kim, T. 873
 Kim, Y. J. 1013
 Kim, Y.-D. 537
 Klein, R. 1047

 Kobbelt, L. 1483
 Krishnan, S. 175
 Kruithof, N. 1075
 Kumar, A. S. 203, 581, 679, 1357

 Lal, P. 487
 Langbein, F. C. 261, 1337
 Langeron, J. M. 1219
 Lartigue, C. 1219
 Law, H.-W. 887
 Lee, J. Y. 217
 Lee, J.-H. 217
 Lee, K. 93
 Lee, K. H. 203, 581, 1357
 Lee, K. S. 1161
 Lee, Y.-G. 75
 Lee, Y.-S. 1295
 Li, H.-X. 37
 Li, W. D. 775, 809
 Li, X. 1171
 Li, Y. 1395
 Lieutier, A. 1029
 Lin, H.-W. 1
 Lin, M. C. 1013
 Liu, H. 1141
 Liu, X. 1129
 Loh, H. T. 231
 Lu, Y. Q. 775, 809
 Lyons, K. W. 75

 Ma, W. 525, 903, 1309
 Ma, X. 525
 Maekawa, T. 1141
 Magillo, P. 141
 Makhanov, S. S. 1117
 Mandorli, F. 65
 Mann, S. 289
 Mannan, M. A. 1281
 Manocha, D. 175, 1013
 Marin, P. 1327
 Marshall, A. D. 261, 1337
 Martin, R. 499
 Martin, R. R. 261, 1337
 McCartney, J. 1129
 Menzel, C. 289
 Mervyn, F. 679
 Meyer, A. 1327
 Mori, M. 735
 Morse, E. P. 691
 Müller, M. 1379
 Munlin, M. 1117
 Muogboh, O. S. 849

 Nalluri, S. R. P. R. 701
 Nam, S.-H. 27

- Narayanaswami, R. 625
 Natekar, D. 473
 Nee, A. Y. C. 679, 759, 775, 1161
 Nnaji, B. O. 849
 Noort, A. 929
 Novotni, M. 1047
- Ong, S. K. 775
- Pan, Z. 525
 Pang, J. 625
 Park H. 1241
 Park, S. C. 279
 Patrikalakis, N. M. 93, 1141
 Peng, W. 1451
 Pérez-Vidal, L. 315
 Perrin, E. 761
 Petermell, M. 333
 Peters, T. J. 1089
 Pieg, L. A., 1423
 Poo, A. N. 1281
 Pottmann, H. 297
 Priyadarshi, A. K. 241
 Puig, A. 315
 Puppo, E. 141
- Qian, X. 1263
 Qin, H. 1101
 Qiu, Z. M. 809
- Regli, W. C. 873
 Renner, G. 351
 Rossignac, J. 1461
- Sachs, E. M. 1141
 Sakalis, T. 1089
 Sapidis, N. S. 549, 1429
 Sarma, R. 821
 Sarraga, R. F. 343
 Schaefer, S. 1471, 1501
 Seidel, H.-P. 95
 Sequin, C. 595
- Shapiro, V. 1011
 Shi, J. 363
 Shi, X. 413
 Sitharam, M. 377
 Sobrero, D. 141
 Song, Z. 835
 Soto-Riera, A. 123
 Steiner, T. 333
 Su, Y. 203, 581
 Subbarayan, G. 473
 Subramani, S. 701
 Sußner, G. 425
 Sun, J. 639
 Sun, J.-G. 1205
 Sun, W. 487
 Sun, Y. F. 1161
 Sundararajan, V. 11
 Suzuki, H. 499
- Tai, C.-L. 1, 447
 Tam, H.-Y. 887
 Tan, S. T. 565, 1189
 Tanaka, M. 723
 Tang, K. 447, 665
 Theodosiou, G. 549
 Tian, S. 975
 Tiller, W. 92
 Tost, D. 315
 Tseng, M. M. 745
 Tso, S.-K. 525, 903
- Varadhan, G. 1013
 Várady, T. 511
 Vegter, G. 1075
 Vila-Marta, S. 123
 Vilaplana-Pastó, J. 123
- Wang, C. C. L. 665
 Wang, D.-x. 1371
 Wang, G.-J. 1, 447
 Wang, J. 735
 Wang, T. 413
- Wang, W. 639
 Wang, Y. 665, 849
 Warren, J. 1501
 Weiß, V. 351
 Weidlich, R. 1439
 Wings, E. 325
 Wong, Y. S. 231, 775, 809
 Woo, T. C. 1253
 Wright, P. K. 11, 595
 Wu, D. 821
 Wu, Y. F. 231
- Xiong, Y.-L. 37
 Xirouchakis, P. 1379
 Xu, H. 887
 Xue, D. 947
- Yamazaki, K. 735
 Yan, Y. 565
 Yang, H. 639, 947
 Yang, M.-Y. 27
 Yang, W.-Q. 111
 Yang, X. 461
 Ye, X. 1451
 Yin, Z.-P. 37
 Yong, J.-H. 1205
 Yu, P. 413
 Yuan, B. 377
 Yuen, M. M. F. 665
 Yin, Z. 1231
- Zhang, X. 473, 735
 Zhang, Y. F. 231
 Zhao, W. 195
 Zheng, G.-Q. 1205
 Zhong, Y. 903
 Zhou, J. 975
 Zhou, K. 363
 Zhou, T. 903
 Zhou, Z. D. 809
 Zhu, W. 1295
 Zou, Z. 691

Keyword index

- Absoïd, 1327
- Access control, 873
- Affine transformation, 1471
- Ambient isotopy, 1089
- Approximation, 351
- Approximations, 1161
- Arbitrary topology, 413
- Arc spline, 1205
- Assembly, 75, 691
- Assembly design, 849, 929
- Assembly drawing, 723
- Automatic mesh generation, 581
- Axiomatic design, 51
- 5-axis machining, 1219, 1295
- 5-Axis machining, 653

- Base surfaces, 607
- Beautification, 261, 1337
- Bezier curve, 1471
- Biarcs, 1241
- Binder wraps, 299
- Biquintic B-spline surface, 413
- Bonegraft, 487
- Boolean combination, 175
- Boolean operations, 315
- Bores machining, 315
- Boundary evaluation, 175
- Boundary representation/b-rep model, 821
- Bounding volume, 1281
- B-spline, 351
- B-spline curve, 639
- B-spline curves, 437, 1461
- Bspline interpolation, 1219
- Buckling, 299
- Building reconstruction, 333

- Cad, 333
- CAD, 487
- CAD education, 1431
- CAD education/training, 1451
- CAD mathematical elements, 1451
- CAD methodology, 1451
- CAD system development, 1451
- CAD system evaluation, 1451
- CAD training, 1431
- CAD/CAM, 849, 1295
- CAE, 849

- CAX education in industry, 1439
- CAX education in universities, 1439
- CAX job profiles, 1439
- Cellular topology, 217
- Circles of Apollonius, 1253
- Circuit inclusion tree, 1461
- Circular arc interpolation, 1205
- Class project, 1501
- Client/server, 775
- Closed point set, 1205
- Cloud data, 231
- CNC simulations, 315
- CNC-machines, 1117
- Collaborative assembly design, 849
- Collaborative assembly modeling, 835
- Collaborative CAD, 835
- Collaborative/distributed design, 873
- Collision detection, 549
- Coloured models, 1371
- COM + , 1129
- Comparison and localization, 1395
- Component technology, 1129
- Composite, 51
- Computation, 351
- Computational geometry, 161, 315, 333
- Computational topology, 1089
- Computer aided design, 1451
- Computer-aided design, 565, 1129
- Computer games, 1501
- Computer graphics, 217, 653
- Conceptual design, 929
- Concurrent engineering, 701, 947
- Cone-cone intersection, 1253
- Conflicting constraints, 377
- Conic arc scaling, 461
- Conic spline, 461
- Consistency maintenance, 929
- Constrained shape modification, 437
- Constraint-based design, 903
- Constraint solving, 123
- Constraints, 501
- Constructive solid analysis, 473
- Constructive solid geometry, 473
- Constructive solid geometry equations, 975
- Convex hull, 625
- Curve approximations, 351
- Curves on surfaces, 351

- Customizability, 745
- Cutting path, 665
- Cylindrical bounded volume, 1189

- 2.5D feature, 11
- 3D Clipping, 701
- 3D Zernike moments, 1047
- Data exchange, 537, 821
- Data fitting, 461
- Data structures, 141
- Degrees of freedom analysis, 261
- Depth buffer, 653
- Design database, 947
- Design for mouldability, 37
- Design formalism, 849
- Design validation, 549
- Developable surfaces, 299
- Dexel-based and layer-based simulation, 401
- Digital halftoning, 1371
- Dimensional reduction, 1357
- Direct and adaptive slicing, 1309
- Discrete B-spline, 413
- Dismantling space, 549
- Distance bounds, 325
- Distance fields, 1013
- Distributed application development, 679
- Distributed architecture, 761
- Distributed CAD, 799, 809
- Distributed design, 775
- Distributed system, 947
- Draft angles addition, 565

- e-Design and realization, 849
- Edge identification, 1327
- Education, 1501
- Education-driven research, 1461
- Envelope, 437
- Error bound, 1075
- Error-bounded approximation, 1241
- ESOLID, 175
- Evaluation of curves and surfaces, 1461
- Exact computation, 175

- Faces, 1461
- Faceted/meshed model, 821
- Fairness, 461

- Feature based design, 1263
- Feature-based design, 217
- Feature-based modelling, 275
- Feature conversion, 701
- Feature mapping, 701
- Feature modelling, 929
- Feature recognition, 735, 993
- Feature views, 929
- Feedrate profile, 27
- Finite element method, 203, 581
- Fitness, 1189
- Fitting condition, 691
- Five-axis machining, 289
- Five-axis ruled surface machining, 967
- Flank milling, 289
- Four-point subdivision, 1461
- Fractal, 1471
- Free space, 549
- Freeform curves
- Free-form pocket machining, 595
- Freeform surface, 11
- Free-form surface, 1395
- Frenet frame, 447
- Functionality constraints, 549
- Functionally graded materials, 51, 1141
- Fused deposition modeling, 1309
- Fuzzy multiple attribute decision-making, 37

- G^1 continuity, 1205
- G^1 smooth, 413
- GapSpace model, 691
- Gaussian curvature, 665
- Geodesic, 447
- Geodesic distance, 665
- Geometric and topological representations, 1063
- Geometric compression, 809
- Geometric constraint solving, 111, 377
- Geometric constraints, 123, 261, 333, 1101
- Geometric feature, 735
- Geometric modelling, 1337
- Geometric mouldability, 37
- Geometric reasoning, 37, 1171
- Geometric simplification, 809
- Geometry processing, 1483
- Graph-based constraint solving, 123

- Haptic models, 1129
- Haptic rendering, 1295
- Haptics, 75
- Hardware supported quality control, 425
- Hausdorff distance, 95, 1241, 1461
- Healing, 1337
- Heterogeneous component, 51
- Heterogeneous materials with a periodic microstructure, 51
- Heterogeneous object modeling
- Hexahedral, 581
- Hexahedral mesh generation, 203
- High speed milling, 1219

- Homotopy, 1029
- Human factors, 1439
- Hyperbolic Hausdorff distance, 95

- Implicit functions, 1101
- Implicit modeling, 1013
- Inconsistent specifications, 377
- Information content, 745
- Injection mould design, 565
- Inspection, 1395
- Integrated design environment, 821
- Integrated product and process design, 679
- Interference detection, 1281
- Intermediate geometric model, 993
- Internet-enabled CAD, 835
- Intersections, 887
- Interval solids, 1089
- Intrinsic property, 1
- Invariants, 1047
- Inverse kinematics, 1117, 1379
- Iterated function system, 1471

- Jerk-limited acceleration, 27
- Joining process, 849

- Kinematic source, 1253
- Knot modification, 437

- Layer-based model, 231
- Level of details (LOD), 217
- Limaçon of Pascal, 1253
- Local composition control, 1141
- Local indicators, 511
- Local scheme, 413
- Locus intersection, 111
- Loop subdivision, 525

- Machine simulation, 289
- Manufacturing optimization, 595
- Mapping, 537
- Mass customization, 745
- Maximal balls, 1075
- Medial axis, 195, 1029, 1075
- Medial axis transform, 95
- Median generation, 1357
- Mesh, 363
- Mesh generation, 425
- Mesh simplification, 525
- Microsphere, 487
- Middleware, 679
- Midsurface generation, 1357
- Milling process, 11
- Minimum distance, 1461
- Mixed-element mesh, 581
- Model equivalency, 975
- Model representation, 903
- Modeling, 51, 487
- Modeling language, 761
- Mold design, 37, 241, 1171
- Molecular mechanics, 75
- Morphing, 343
- Multi-domain meshing, 203, 581

- Multi-piece molds, 241
- Multi-resolution, 141, 217
- Multiresolution, 799
- Multiresolution analysis, 625
- Multi-resolution modeling, 873
- Multi-shot molds, 1171

- NC machining, 625, 1231, 1281, 1295
- NC simulation, 967
- NC tool paths, 325
- Non-manifold model, 581
- Non-manifold modeling, 141, 1461
- NURBS, 461
- NURBS curves and surfaces, 1161
- NURBS surface, 735
- NURBS surfaces, 425

- Octree, 799, 1281
- Offsets, 887
- Offsets and deformations, 1089
- Offsetting, 1161
- Optimal design, 473
- Optimal single biarc fitting, 1241
- Optimization, 639
- Orientation area, 735
- Orientation region, 735
- Oriented bounding box, 1281
- Orthographic view, 723
- Ovals of Descartes, 1253
- Overconstrained problem, 377

- Parameterization, 607
- Parametric CAD, 111
- Parametric feature, 537
- Parametric interpolator, 27
- Parametric modeling, 975
- Parametric surfaces, 1461
- Part detail design, 929
- Part drawing, 723
- Part manufacturing planning, 929
- Partial differential equation techniques, 1101
- Pencil-cut planning, 1295
- Performance measure, 745
- Physical mock-up, 65
- Planar faces, 333
- Plane arrangements, 1461
- Plant layout, 549
- Pocketing, 625
- Point cloud, 1, 195
- Point-set topology, 1461
- Polygon subdivision, 1461
- Polygons, 1461
- Power diagram, 1075
- Process capability, 745
- Product and assembly modeling, 1063
- Product and process platforms, 745
- Product design, 745
- Product development, 929
- Product engineering, 65
- Profiles, 887
- Progressive solid model, 217
- Pythagorean hodograph curves, 325

- Quadrilateral, 581
- Range data, 501
- Rapid prototyping, 231, 1309, 1371
- Reconstruction, 1
- Redundant constraints, 377
- Reflection Lines, 425
- Region growing, 1327
- Regional milling, 279
- Regular triangulation, 1075
- Representation conversion, 1063
- Reverse engineering, 231, 261, 333, 501, 511, 607, 799, 1063, 1089, 1327, 1337
- Role-based viewing, 873
- Sampled surfaces, 161
- Scattered data fitting, 1101
- Scattered data interpolation, 161
- Sculptured surface machining, 279
- Segmentation, 511, 1327
- Selective hatching, 1309
- Selective refinement, 809
- Self-intersections, 1161
- Semantics recognition, 993
- Service-oriented architecture, 849
- Shape approximation, 639
- Shape descriptor, 1047
- Shape design, 1101
- Shape-error, 231
- Shape generation library, 537
- Shape retrieval, 1047
- Ship engine-room, 549
- Ship structural model, 537
- Shortest path, 665, 1117
- Signal processing, 363
- Skeleton, 95, 1029
- Skin surfaces, 1075
- Smallest cylinder, 1189
- Smart materials, 51
- Solid decomposition, 1357
- Solid free-form fabrication, 1141
- Solid model, 723
- Solid model streaming, 217
- Solid modeling, 903, 1263
- Space of planes, 333
- Space requirements, 549
- Spatial basic configuration, 111
- Spatial partitioning, 241
- Spherical harmonic transform, 363
- Spherical parameterization, 363
- Spline curves, 325
- Spline interpolation, 1379
- Spline interpolation and approximation, 343
- Squared distance, 639
- Stability, 95
- Standard for the exchange of product model data AP218, 537
- Statistical similarity tests, 511
- Stitching, 1357
- Style, 65
- Subdivision surfaces, 525
- Surface approximation, 1075
- Surface fitting, 525, 607, 1327
- Surface flattening, 447, 665
- Surface pencil, 447
- Surface reconstruction, 799, 1089
- Surface tiling, 315
- Swept profile, 967
- Swept volume, 1013
- Teaching curriculum, 1483
- Template equation, 1379
- Three-dimensional printing, 1141
- Three-dimensional surfaces, 887
- Tissue scaffold, 487
- Tolerance analysis, 691
- Tool path computation, 1219
- Tool path generation, 289
- Tool-path optimization, 1117
- Tool sequence selection, 595
- Topological modeling, 525
- Topological modification, 1337
- Touch interaction, 1129
- Training methods, 1439
- Triangular mesh projection, 279
- Triangular mesh slicing, 279
- Triangulated surfaces, 653
- Triangulations, 299
- Trimming curve, 809
- Turtle geometry, 1471
- Variational methods, 343
- Virtual design, 903
- Virtual engineering, 549
- Virtual mock-up, 65
- Virtual prototyping, 401, 1295
- Virtual reality, 75, 903
- Virtual reality in design, 1129
- Virtual solid, 549
- Visibility culling, 809
- Visualisation, 401
- Volume between solid and surface, 549
- Volume datasets, 1371
- Volume graphics, 1101
- Voronoi diagram, 195
- Wavelets, 625
- Weakly injective domain, 95
- Web-based software, 761
- XML, 679

